NWRWAVES
(NOAA Weather Radio With All-Hazards VTEC Enhanced Software)

Version 2.6 Transition Document

Version	v2.6 (OB6.0.3 release)
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This document serves as a reference for existing NWRWAVES users, highlighting the software changes that have occurred between the OB6 baseline install version 2.4 and the OB6.0.3 April 2006 release of version 2.6. Modifications are in no particular order of importance, so please read this document in its entirety. Specific installation/configuration instructions can be found in the **NWRWAVES Documentation v2.6** document.

It is important to note that NWRWAVES v2.6 will work as the current version (v2.4) does right out of the box. Adjustments to configurations are only needed to take advantage of new functionality.

1. Word/phrase replacement from WordFile.txt has been corrected to function even if the phrase spans two (ore more) lines in a product. **No modifications are needed to present setup to facilitate this new functionality.**
   JUSTIFICATION: Original intended design. Bug fix from V2.4.

2. WordFile_SPN.txt file has been added, and will be invoked for word/phrase replacement if a Spanish file is detected via the PIL CCCNNNSPN. Functionality is similar to that of the WordFile.txt post-processing file. Most sites will not need to make any changes within this new file; however, any site that uses Spanish text may wish to make entries for Spanish phrase substitutions.
   JUSTIFICATION: Requirement by San Juan and potentially other WFOs. Similarly spelled words can have completely different meanings/pronunciation in English vs. Spanish, so separate files for post-processing are required.

3. Spanish MND date/time lines are now properly parsed and decoded. This modification only affects sites wishing to process Spanish AWIPS products, and even for those sites**, no configuration/setup manipulation is required to take advantage of this new capability**.
   JUSTIFICATION: The mass news dissemination date/time line is used by NWRWAVES as both a starting (stopping) point for processing and for date/time information. Products authored in Spanish would have failed the NWRWAVES processing routine due to differences in expected phrasing between English and Spanish date/time groups.

4. Upgrade/Cancellation messages, as determined by P-VTEC coding, will now be correctly disseminated to CRS. This affects all sites, but **no setup/configuration manipulation is needed to take advantage of the bug fix.** This was a bug reported over the winter months, particularly when cancelling a watch and issuing a warning/advisory.

JUSTIFICATION: A coding flaw in V2.4 occasionally prevented these messages from being generated and/or disseminated. This resulted in stale information being broadcast on CRS as well as a discrepancy in the expected MRD replace sequence contained on CRS.

5. Modified UGC/VTEC decoder library to allow partial FIPS/UGC codes in the format of SSnnnn where the third character is now a numeric value instead of the typical C or Z UGC coding.
   JUSTIFICATION: Although partial FIPS codes have yet to be implemented in NWS baseline software (WarnGen, GHG, RiverPro, etc…), there is an obvious need for more localized product dissemination protocol where large counties exist across the Plains and the western US. It is understood that baseline software cannot yet generate these partial county codes. However, assuming that WFOs have the means to internally alter the coding generated by baseline software, NWRWAVES has been adapted to accept and process this altered coding. Likewise, partial FIPS counties can be added through the NWRWAVES Setup GUI as a Local LAC and assigned to a transmitter.

6. UGC/VTEC decoder library will now correctly parse UGC coding spanning 3 or more lines of text.
   No manipulation of setup/configuration is required to take advantage of this bug fix.

   JUSTIFICATION: Recent severe weather outbreaks have uncovered a long-standing bug in the UGC/VTEC decoder library that was originally adapted from XNOW. Specifically, a coding flaw failed to process intermediate lines of UGC coding when the contents spanned 3 or more lines in a NWS product. Standard WFO county warning areas were small enough to have hidden this flaw for years. However the Watch Outline Update (WOU) product, which by nature can cover multiple CWAs within the same state, may have extensive UGC coding. As a result, on rare occasion, NWRWAVES would omit intended counties from an initial watch bulletin, preventing proper receipt and toning of tornado and severe thunderstorm watches by all intended counties. This bug has been corrected.

7. Added a new product configuration option in the NWRWAVES Setup GUI to establish an effective start time of a CRS broadcast.
   JUSTIFICATION: Added requirement from CAFÉ. Used in conjunction with the periodicity setting, the option to set the initial broadcast time can allow offices to schedule products to play routinely at expected time slots. The NWRWAVES Setup GUI will allow you the option of setting the minute (00-59) for the broadcast effective time.

For each product in the "Product Configuration" tab, look for the option "CRS Effective Time xx minutes after the hour". Select a two digit number from the drop down menu (or enter it in manually). This will allow the product to have an effective time xx minutes after the hour. If this number were set to 15, the resulting output would have an effective time 15 minutes after the hour (either ahead to 15 past if the product is issued between the top of the hour and 14 past, or back to 15 past the current hour if it is issued from 15 to 59 minutes after the hour).

8. Added the functionality of a core county/zone to the NWRWAVES transmitter configuration. Offices will be able to establish one core county and one core zone for each transmitter. On a product by product basis, offices now have the option to process only those product segments which contain the core county/zone assigned to a given transmitter. This core county/zone is global in nature for each transmitter; thus, one cannot assign one to the ZFP and a second to the NOW.
    JUSTIFICATION: Added requirement from CAFÉ. For non-VTEC encoded products, such as the ZFP, there may be many product segments which are all broadcast on a given transmitter. This option provides WFOs with the capability to filter out products, such that only those segments which contain the established core county/zone for each transmitter are processed.

    To assign the core county/zone, call up the NWRWAVES Setup GUI and select the "Transmitter Configuration" tab.
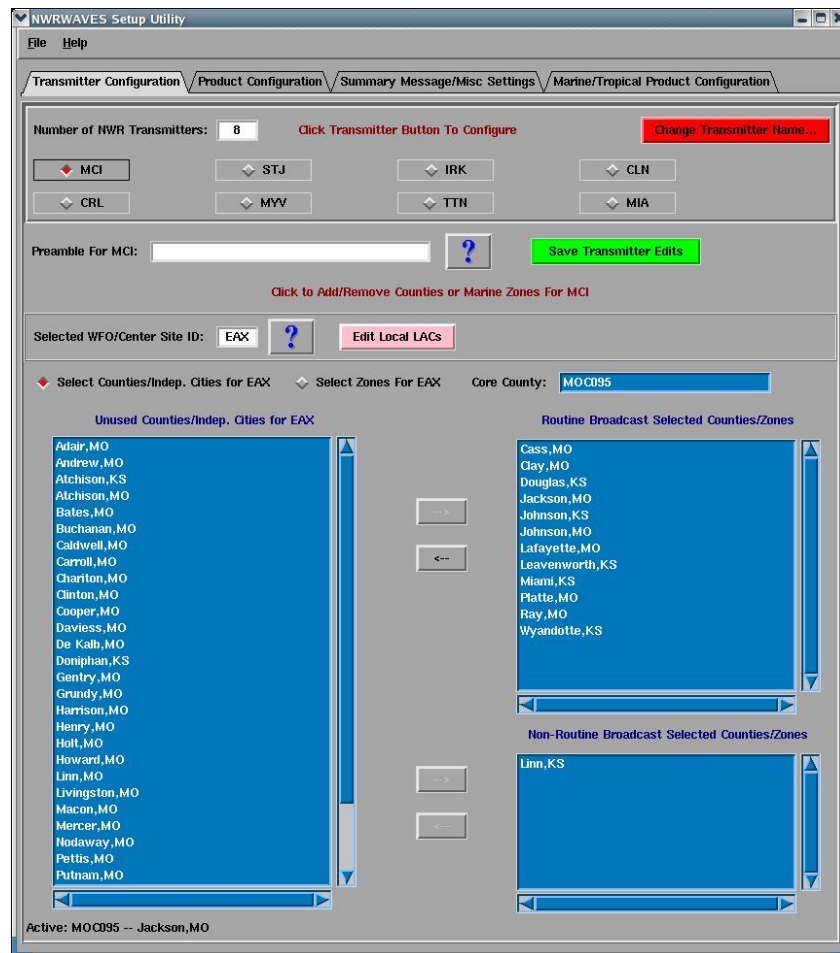
To assign a "core county", select the radio button for "Select Counties/Indep. Cities for XXX" where XXX is your site identifier. You will see the listing of routine and non-routine Broadcast Service Area counties/independent cities assigned to each transmitter. Move the mouse over the name of the one you wish to assign as "core county", then right-click its label. The LAC assigned to that core county will now appear in the box above the Routine Broadcast Service Area next to the label "Core County".

Repeat this action for the zones (use the radio button "Select Zones for XXX", then repeat both steps for each transmitter you have. At this time, if you have separated routine vs. non-routine BSA counties/zones to facilitate a core county functionality (i.e., as in v2.4), you may wish to reassign counties and zones to routine vs. non-routine to help facilitate processing or tone alert requirements (which is what routine vs. non-routine was designed to do).

To invoke core county/zone per product, you will need to go to the NWRWAVES Product Configuration Tab (see previous example). For each non-VTEC product entry, you will see a new option labeled "Process ONLY for Core County/Zone?" Selecting "Yes" will allow NWRWAVES to process only a segment from that product that contains the core county/zone. Furthermore, only the core county/zone will be used in message assembly, assuring that Identical Message Type/Identical LAC replace will work each time irregardless of zone grouping combinations.

9. Per request, product overview sections will be processed and disseminated separately to CRS. To avoid unintended overlap, the CRS PIL generated by NWRWAVES will be in the format CCCOVRXXX where CCC = the issuing WFO and XXX = the legacy product PIL. For example, WFO EAX configures the Winter Storm Watch (WS.A) product in the NWRWAVES Setup GUI to process the overview section. If a Winter Storm Watch is received by NWRWAVES and contains an overview section, this information will be disseminated separately as EAXOVRWSW. Because the OVR is treated like a

unique product, WFOs can configure the overview itself by selecting the OVR product from the NWRWAVES Setup GUI (you can assign periodicity, effective time, etc). ***Note: the OVR product will be added automatically for you into your product configuration by the v2.6 install script. In addition, a related bug fix was incorporate to include headlines that are present in the overview section.***

Sites will need to add the appropriate OVR Message Types to their CRS database and subsequent Broadcast Suites to enable the overview to broadcast.

JUSTIFICATION: In version 2.4, setting the overview option in the NWRWAVES Setup GUI simply caused an overview section to be appended to the beginning of the CRS-bound product. Because NWRWAVES processes each segment and each VTEC string separately, redundant overview sections were being duplicated on each outbound CRS message. This modification will not only reduce cycle times, but provide an effective means of enhancing and customizing CRS broadcasts.

10. MARINE - The NWRWAVES Setup GUI has been modified to allow Great Lakes WFOs to schedule individual lakes and sub-sections of the GLF product on specified transmitters.

For the GLF product, reference the above example. Sites can now put in multiple section headers to cover the various scenarios that an issuing office might use any given day (divisions can change depending on the weather). For each of these divisions, you will see a series of check marks for each transmitter. Sites can check the appropriate boxes to ensure broadcast of this section on the transmitter. In the above example, the "EAST HALF" would only broadcast on MCI, while the "NORTH HALF" would broadcast on STJ, IRK, and CLN. This, in conjunction with the periodicity/effective time combination invoked from the Product Configuration tab, will give sites tremendous flexibility in

assigning and broadcasting sections from the GLF.   Each lake can have unique section headers and assigned transmitters, even if those section headers are duplicated across products.

JUSTIFICATION: Given the large expanse of the Great Lakes, a post V2.4 requirement was established by Great Lakes WFOs to allow for further customization of the GLF product. Specifically, there was a desire to provide the capability of allowing GLF sub-sections to be broadcast on a transmitter-by-transmitter basis.

11. Modified core NWRWAVES structure to process multiple P-VTEC lines in a given segment individually. **No configuration/setup manipulation is required to take advantage of this bug fix.** If multiple VTEC lines are detected in a product segment by NWRWAVES, the following rules will govern message generation:
    1.) A VTEC line with an action of CAN (cancel) or UPG (upgrade) will have a product generated with a modified expiration time of 10 minutes. (This is done to invoke an MRD replace on CRS).
    2.) A VTEC line that contains a tone alerted phenomenon (e.g. TO.W) will be automatically generated.
    3.) Otherwise, if condition #2 is not met, remaining VTEC lines are then ranked using a priority file (/awips/adapt/NWRWAVES/bin/VTECrank.ini) established by the NWRWAVES development committee and the six NWS regions. The VTEC phenomenon with the highest priority will determine the PIL and settings used for message dissemination.
    JUSTIFICATION: Based on developer observations and feedback from initial V2.4 deployment, a code restructuring was required to handle events with multiple-ongoing VTEC phenomena (especially in winter weather, marine and certain non-precipitation events). The coding change philosophy satisfies the need to protect those hazards which require SAME/1050Hz tone requirements, while avoiding duplicated/redundant broadcasts among remaining hazards.

12. Fixed a bug in the NWRWAVES Setup GUI where if two zones/counties had identical names, only the first UGC was added to the transmitter configuration file. **No manipulation of setup/configuration is required to take advantage of this bug fix.**
    JUSTIFICATION: Bug fix from V2.4. This instance occurred in several areas with identical public/fire weather zones.

13. Fixed a bug which caused an intended tone alert silence period to fail if the established silence period crossed midnight local time. **No manipulation of setup/configuration is required to take advantage of this bug fix.**
    JUSTIFICATION: Bug fix from V2.4.

14. Yes/No Setup GUI options for "Repeat Headlines" and "Generate Summary Message" are now greyed out (not selectable) for non-VTEC products. **No manipulation of setup/configuration is required to take advantage of this bug fix.**
    JUSTIFICATION: Both options require VTEC coding to be present, so this change was made to avoid confusion.

15. A separate VTEC_Summary.TEST file will be used by NWRWAVES to separate hazard tracking invoked by NWRWAVES' TEST mode versus live hazards being tracked in normal operation. **No manipulation of setup/configuration is required to take advantage of this bug fix.**
    JUSTIFICATION: Although NWRWAVES V2.6 will now use single product threading (discussed later in this document), the addition of a separate tracking table provides an additional blanket of security while also allowing WFOs testing NWRWAVES to separately monitor the results and output.

16. A generic message type option has been added to each product in the NWRWAVES Setup GUI. This serves as an alterative to the transmitter specific messages generated by default from NWRWAVES. Instead, one message will be sent to CRS where transmitter assignment will be determined by county/zone coding.

    The CRS PIL used in generic message assembly is different than transmitter specific, and will usually match the AWIPS PID. The format will be CCCNNNXXX where CCC = **State Node**, NNN = NWRWAVES Issuance or follow-up header, XXX = **Issuing office**.

    To invoke generic message type usage (by NWRWAVES product), call up the NWRWAVES Product Configuration GUI.

For the option "Process as Generic Message Type?", select "Yes" and message assembly for this particular product type will be in the generic format. Selecting "No" will mean transmitter-specific output as before. By default, all products are assigned "No" in the v2.6 installation script.

Sites are strongly recommended to convert all short-fuse warning products (SVR, TOR, FFW) to generic message type assembly, and to look at others as appropriate to minimize impacts of VIP and CRS on weather message load.

JUSTIFICATION: Despite the numerous advantages of the original NWRWAVES design, recent severe weather outbreaks discovered that NWRWAVES design can exceed the processing capabilities of the existing CRS/VIP architecture, framework and hardware. The resulting bottleneck of products resulted in severe problems, including but not limited to: extreme product delays, processor timeouts, database corruption, and unexpected MRD replace behavior. To overcome these challenges, a generic type message option was added. Specifically, short fuse warnings/statements internally contain all the necessary timing and location information, such that transmitter specific messages are not required. By invoking the generic message on tornado, severe thunderstorm, flash flood and special marine

warnings/statements, a dramatic reduction in CRS/VIP processing time was immediately observed by beta offices involved in subsequent severe weather events. Critical weather bulletins were transmitted immediately and the occurrence of other interrelated problems have ceased.

17. National UGClookup.table file has been updated to reflect numerous changes requested by WFOs. This includes Indiana, Guam time zone changes. **No manipulation of setup/configuration is required to take advantage of this bug fix.**

18. Code modified to handle new ChST time zone for Guam WFO. **No manipulation of setup/configuration is required to take advantage of this bug fix.**

19. Code modified to handle AST4 time zone for San Juan PR WFO instead of VST4. **No manipulation of setup/configuration is required to take advantage of this bug fix.**

20. NWRAVES now uses single threaded processing instead of looping over the product queue during each iteration of the software. **No manipulation of setup/configuration is required to take advantage of this bug fix.**

    JUSTIFICATION: This coding change was invoked to avoid possible overlap of operational and test products, as experienced by a number of offices after V2.4 deployment.

21. The following, mostly cosmetic, NWRWAVES Setup GUI Changes are also included in V2.6:
    1.) Install script and NWRWAVES Setup GUI modified to handle new core county/zone and effective time fields.
    2.) Per suggestion by Amarillo TX WFO, GUI has been adjusted to align product configuration settings for easier setup.
    3.) Modified a number of the help pop-ups to better explain scenarios that were deemed confusing based on listserv traffic.
    4.) Removed 24 hour restriction on broadcast duration override field.
    5.) VIP (Concatenated Voice) pull down option replaced by more correct VIP (Default).
    6.) Interface modification to handle transmitter specific Great Lakes Forecast (GLF) product settings.